Paper No. 18

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte TERRY BRICHENO and JAMES WILSON PARKER

Appeal No. 2001-2134
Application No. 09/101,276

ON BRIEF

Before THOMAS, KRASS and RUGGIERO, Administrative Patent Judges.

KRASS, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the final rejection of claims 1-4.

The invention is directed to an assembly for combining the outputs from a group of n single mode optical fibers onto the photosensitive surface of a photodetector. In order to achieve this, the assembly is comprised of an adiabatically tapered

bundle of single mode fibers, the small end of which is optically coupled to one end of a length of multimode fiber. The other end of the multimode fiber is optically coupled with the photosensitive surface of the photodetector.

Independent claim 1 is reproduced as follows:

An assembly including a close-packed bundle of optical fibres having adiabatically tapered fibre cores, which fibres are single mode at the large end of the taper, wherein the small end of the taper is optically coupled with one end of a length of multimode fibre the other end of which multimode fibre is optically coupled with the photosensitive area of a photodetector.

The examiner relies on the following references:

O'Shaughnessy et al. [O'Shaughnessy]	5,138,677	Aug. 11, 1992
Wong	5,408,556	Apr. 18, 1995

Claims 1-4 stand rejected under 35 U.S.C. 103 as unpatentable over Wong in view of O'Shaughnessy.

Reference is made to the briefs and answer for the respective positions of appellants and the examiner.

OPINION

The examiner applies Figures 5 and 11 of Wong and states

that while Wong is directed to a splitter, it is "well within the knowledge of those of ordinary skill in the art to use such a device as a combiner, since they are interchangeable in the art for the purpose of transmitting a series of light beams as information to and from different locations" [answer-page 3].

The examiner then applies O'Shaughnessy for the teaching of coupling a fiber bundle output, using a lens 50 into a photodetector 28, and concludes that it would have been obvious "to use the Wong system in concert with the teachings of the O'Shaughnessy...lens and detector, in order to provide a plurality of signals from a plurality of locations to a single receiving station" [answer-page 3].

We reverse.

Appellants dispute the examiner's allegation that the artisan would have recognized that the splitter of Wong may be formed as a combiner and that it would have been obvious to do so. While appellants admit that, *in general*, a splitter and combiner are interchangeable, they contend that it is "not true that a low-loss 1xN splitter will, in general, function in the reverse direction as a low-loss Nx1 combiner" [principal brief-

page 7]. At page 7 of the principal brief, appellants give an example, wherein light is launched into one of sixteen single mode fibers in Wong, of how light emerging from the single mode fiber 11 will have been attenuated by not less than 12dB, in order to show that using Wong's device as a combiner will not result in a low-loss device, as in the claimed invention.

The examiner does not dispute this low-loss example but, instead, argues that "low-loss" is not a claimed limitation. While those exact words do not appear in independent claim 1, it is clear that the claimed device is, indeed, directed to "low-loss" devices. As explained by appellants in the reply brief, since coupling devices are implicitly low-loss devices unless explicitly directed to achieving a desired level of attenuation, and the claims do not explicitly recite any desirable attenuation, the artisan would have recognized that when optically coupling a signal from fiber to a detector it is desirable to minimize the attenuation of the signal. While this rationale is debatable, and one could argue that by not reciting, one way or the other, in the claims, that the device is "low-loss," the amount of loss is not a consideration, there is a more compelling reason for treating the claimed device as "low-loss."

As pointed out by appellants, at page 2 of the reply brief,

the claims recite "adiabatically tapered fibre cores." This taper is arranged to conserve energy within the same optical mode, i.e., the definition of "adiabatically" is that no energy is lost. Accordingly, this term, used in the claim, supports appellants' assertion that the claimed device is "low-loss." Moreover, the only consideration the examiner gives to the claimed term, "adiabatically," is to imply in the statement of the rejection, at page 3 of the answer, that tapering by uniformly stretching all of the fibers in the bundle using heat until a desired diameter of the bundle at the narrow end of the taper is achieved is, somehow, "adiabatically tapered." However, the examiner gives no explanation as to why Wong's taper using heat somehow results in "adiabatically tapering." There is no further discussion by the examiner, in the response section of the answer, as to the "adiabatically tapering" claim limitation.

Accordingly, since the examiner has not adequately addressed all of the claim limitations, no prima facie case of obviousness has been made and we will not sustain the rejection of claims 1-4 under 35 U.S.C. 103.

The examiner's decision is reversed.

REVERSED

JAMES D. THOMAS Administrative Patent Judge	)	
ERROL A. KRASS Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
JOSEPH F. RUGGIERO Administrative Patent Judge	)	

EK/RWK

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